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(contra)

an image reconstructor configured to utilize the attenuation data to reconstruct an image of the organ, including utilizing the relatively lower spatial resolution data, to thereby reduce artifacts in the image.

Remarks

The Office Action mailed December 19, 2002 has been carefully reviewed and the following remarks are made in consequence thereof.

Claims 1-20 are pending. Claims 1-20 are rejected.

In accordance with 37 C.F.R. 1.136(a), a two month extension of time is submitted herewith to extend the due date of the response to the Office Action dated December 19, 2002, for the above-identified patent application from March 19, 2003, through and including May 19, 2003. In accordance with 37 C.F.R. 1.17(a)(2), authorization to charge a deposit account in the amount of \$410.00 to cover this extension of time request also is submitted herewith.

The rejection of Claim 1 under 35 U.S.C. § 103 as being unpatentable over Fujise in view of Pfoh et al. is respectfully traversed.

Fujise describes a method of imaging an organ by scanning with a source and a detector coupled to a rotating gantry and reconstructing an image (Column 4, lines 2-7).

Pfoh et al. describe a detector array (16) formed by a number of detector elements (18) in combination with a mask (60) positioned over the detector array to selectively block x-rays from reaching the detector elements (column 3, lines 53-55). The mask has staggered segments that block x-rays and divide the detector array into a pair of slice planes (Abstract, limes 4-5).

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching,

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suggestion, or incentive supporting the combination. Neither Fujise nor Pfoh et al., considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Fujise with Pfoh et al., because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Pfoh et al. is cited for its teaching of a mask, and Fujise is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

Further, and to the extent understood, neither Pfoh et al. nor Fujise, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 1 recites a method including the steps of "scanning a volume of a patient's body including an organ

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of the patient with a computed tomographic (CT) imaging system having a radiation source and detector coupled to a rotating gantry, the detector array having a z-direction parallel to an axis of rotation of the gantry and an x-direction transverse to the z-direction; acquiring attenuation data from a plurality of staggered half detector segments of the detector array, wherein said staggered half detector segments separated by empty space therebetween; and reconstructing an image including the patient's organ using the acquired attenuation data".

Neither Fujise nor Pfoh et al., considered alone or in combination, describe or suggest a method including acquiring attenuation data from a plurality of staggered half detector segments of the detector array, wherein the staggered half detector segments are separated by empty space therebetween. Rather, Fujise describes that a source and a detector are coupled to a rotating gantry, and Pfoh et al. describe using a mask having staggered segments to block x-rays from detector elements. For the reasons set forth above, Claim 1 is submitted to be patentable over Fujise in view of Pfoh et al.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claim 1 be withdrawn.

The rejection of Claim 2 under 35 U.S.C. § 103 as being unpatentable over Fujise in view of Pfoh et al., and further in view of Cuppen is respectfully traversed.

Fujise and Pfoh et al. are described above. Cuppen describes a detector system including a two-dimensional matrix of detector cells (column 5, lines 37-39). The matrix includes rows extending in a traverse direction and columns extending in a longitudinal direction (column 5, lines 42-45). Some columns have different widths (column 5, lines 47-53).

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by

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combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Fujise, Pfoh et al., and Cuppen, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Fujise with Pfoh et al. and Cuppen, because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Pfoh et al. is cited for its teaching of a mask, Fujise is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, and Cuppen is cited for its teaching of columns with different widths. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none of Pfoh et al., Fujise, and Cuppen, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 2

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depends from Claim 1 which recites a method including the steps of "scanning a volume of a patient's body including an organ of the patient with a computed tomographic (CT) imaging system having a radiation source and detector coupled to a rotating gantry, the detector array having a z-direction parallel to an axis of rotation of the gantry and an x-direction transverse to the z-direction; acquiring attenuation data from a plurality of staggered half detector segments of the detector array, wherein said staggered half detector segments separated by empty space therebetween; and reconstructing an image including the patient's organ using the acquired attenuation data".

None of Fujise, Pfoh et al., and Cuppen, considered alone or in combination, describe or suggest a method including acquiring attenuation data from a plurality of staggered half detector segments of the detector array, wherein the staggered half detector segments are separated by empty space therebetween. Rather, Fujise describes that a source and a detector are coupled to a rotating gantry, Pfoh et al. describe using a mask having staggered segments to block x-rays from detector elements, and Cuppen describe columns of different widths. For the reasons set forth above, Claim 1 is submitted to be patentable over Fujise in view of Pfoh et al and further in view of Cuppen.

Claim 2 depends from independent Claim 1. When the recitations of Claim 2 are considered in combination with the recitations of Claim 1, Applicant submits that dependent Claim 2 likewise is patentable over Fujise in view of Pfoh et al., and further in view of Cuppen.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claim 2 be withdrawn.

The rejection of Claims 3-6, 9, and 11 under 35 U.S.C. § 103 as being unpatentable over Toth et al. in view of Applicant's admission of the prior art is respectfully traversed.

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Toth et al. describe a detector including a plurality of modules wherein each module includes a plurality of detector cells (column 2, lines 58-60).

Applicant describes in the BACKGROUND OF THE INVENTION that in known third generation CT systems, the x-ray source and the detector array are rotated within the imaging plane and around an object to be imaged (page 1, lines 15-17). Applicant also describes in the BACKGROUND OF THE INVENTION that in known third generation CT systems, an image reconstructor receives sampled and digitized x-ray data from a DAS and performs high speed image reconstruction (page 2, lines 22-23). The BACKGROUND OF THE INVENTION also describes that Figure 9 illustrates rows of detector elements extending linearly in the plane of the paper, but that in reality, the rows follow the arc of the detector array (page 4, lines 16-18.) Notably, Figure 9 does not show a plurality of staggered half detectors segments abutted in regions about a centerline, and Applicant respectfully traverses the assertion in the Office Action that "AAPA discloses staggered half detector segments abutted about a centerline (col. 4, lines 16-18, and Fig. 9)" (Office Action dated July 5, 2002, page 3, section 3, second paragraph).

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Neither Applicant's BACKGROUND OF THE INVENTION, not Toth et al., considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Applicant's BACKGROUND OF THE INVENTION with Toth et al. because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

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Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Toth et al. is cited for its teaching of modules, and Applicant's BACKGROUND OF THE INVENTION is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

Further, and to the extent understood, neither Toth et al., nor Applicant's BACKGROUND OF THE INVENTION, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 3 recites a radiation detector for an imaging system, wherein "said radiation detector having a centerline and comprising a plurality of staggered half detector segments abutted in regions about said centerline and apparated from one another by empty space, said staggered half detector segments each comprising a plurality of detector modules".

Neither Applicant's BACKGROUND OF THE INVENTION nor Toth et al., considered alone or in combination, describe or suggest a radiation detector including a plurality of staggered half detector segments abutted in regions around a centerline and separated from one

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another by empty space. Rather, Applicant's BACKGROUND OF THE INVENTION describes that a source and a detector are coupled to a rotating gantry, and Toth et al. describe detector modules. For the reasons set forth above, Claim 3 is submitted to be patentable over Toth et al. in view of Applicant's admission of the prior art.

Claims 4-6, 9, and 11 depend from independent Claim 3. When the recitations of Claims 4-6, 9, and 11 are considered in combination with the recitations of Claim 3, Applicant submits that dependent Claims 4-6, 9, and 11 likewise are patentable over Toth et al. in view of Applicant's admission of the prior art.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 3-6, 9, and 11 be withdrawn.

The rejection of Claim 7 under 35 U.S.C. § 103 as being unpatentable over Toth et al. in view of Applicant's admission of the prior art, and further in view of Cuppen is respectfully traversed.

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Applicant's BACKGROUND OF THE INVENTION, Toth et al., and Cuppen, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Toth et al. with Applicant's BACKGROUND OF THE INVENTION and Cuppen because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

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Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Toth et al. is cited for its teaching of modules, Applicant's BACKGROUND OF THE INVENTION is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, and Cuppen is cited for its teaching of columns of different widths. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none of Toth et al., Applicant's BACKGROUND OF THE INVENTION, and Cuppen, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 7 depends from Claim 3 which recites a radiation detector for an imaging system, wherein "said radiation detector having a centerline and comprising a plurality of staggered half detector segments abutted in regions about said centerline and separated from one another by empty space, said staggered half detector segments each comprising a plurality of detector modules".

None of Toth et al., Applicant's BACKGROUND OF THE INVENTION, and Cuppen, considered alone or in combination, describe or suggest a radiation detector including a plurality

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cf staggered half detector segments abutted in regions around a centerline and separated from one another by empty space. Rather, Applicant's BACKGROUND OF THE INVENTION describes that a source and a detector are coupled to a rotating gantry, Toth et al. describe detector modules, and Cuppen describes columns of different widths. For the reasons set forth above, Claim 3 is submitted to be patentable over Toth et al. in view of Applicant's admission of the prior art, and further in view of Cuppen.

Claim 7 depends from independent Claim 3. When the recitations of Claim 7 are considered in combination with the recitations of Claim 3, Applicant submits that dependent Claim 7 likewise is patentable over Toth et al. in view of Applicant's admission of the prior art, and further in view of Cuppen.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claim 7 be withdrawn.

The rejection of Claim 8 under 35 U.S.C. § 103 as being unpatentable over Toth et al. in view of Applicant's admission of the prior art and of Cuppen, and further in view of Hsieh is respectfully traversed.

Hsieh describes a combination of double and triple cell ganging which resolves any incompatibility between the number of detector channels and the lower number of DAS channels (Abstract, lines 1-3).

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Applicant's BACKGROUND OF THE INVENTION, Toth et al., Cuppen, and Hsieh, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office

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Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Toth et al. with Applicant's BACKGROUND OF THE INVENTION, Cuppen, and Hsieh because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Toth et al. is cited for its teaching of modules, Applicant's BACKGROUND OF THE INVENTION is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, Cuppen is cited for its teaching of columns of different widths, and Hsieh is cited for its teaching of double and triple ganging of cells. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none of Toth et al., Applicant's BACKGROUND OF THE INVENTION, Cuppen, and Hsieh, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 8 depends from Claim 3 which

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recites a radiation detector for an imaging system, wherein "said radiation detector having a centerline and comprising a plurality of staggered half detector segments abutted in regions about said centerline and separated from one another by empty space, said staggered half detector segments each comprising a plurality of detector modules".

None of Toth et al., Applicant's BACKGROUND OF THE INVENTION, Cuppen, and Esieh, considered alone or in combination, describe or suggest a radiation detector including a plurality of staggered half detector segments abutted in regions around a centerline and separated from one another by empty space. Rather, Applicant's BACKGROUND OF THE INVENTION describes that a source and a detector are coupled to a rotating gantry, Toth et al. describe detector modules, Cuppen describes columns of different widths, and Hsieh describes double and triple ganging of cells. For the reasons set forth above, Claim 3 is submitted to be patentable over Toth et al. in view of Applicant's admission of the prior art and Cuppen, and further in view of Hsieh.

Claim 8 depends indirectly from independent Claim 3. When the recitations of Claim 8 are considered in combination with the recitations of Claim 3, Applicant submits that dependent Claim 8 likewise is patentable over Toth et al. in view of Applicant's admission of the prior art and Cuppen, and further in view of Hsieh.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claim 8 be withdrawn.

The rejection of Claim 10 under 35 U.S.C. § 103 as being unpatentable over Toth et al. in view of Applicant's admission of the prior art and further in view of Hoffman et al. is respectfully traversed.

Hoffman et al. describe a collimator including a housing and a grid connected to the housing, wherein the grid includes a plurality of blades and a plurality of attenuating wires,

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wherein each of the blades being radially spaced from and extending substantially parallel to an adjacent one of the blades, and wherein the wires extend substantially perpendicular to the blades (Claim 1).

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Toth et al., Applicant's EACKGROUND OF THE INVENTION, and Hoffman et al., considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Toth et al. with Applicant's BACKGROUND OF THE INVENTION and Hoffman et al. because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Toth et al. is cited for its teaching of modules, Applicant's BACKGROUND OF THE INVENTION is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, and Hoffman et al. is cited for its teaching of blades being radially spaced from and extending substantially parallel to an adjacent

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one of the blades, and wherein the wires extend substantially perpendicular to the blades. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none of Toth et al., Applicant's BACKGROUND OF THE INVENTION, and Hoffman et al., considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 10 depends indirectly from Claim 3 which recites a radiation detector for an imaging system, wherein "said radiation detector having a centerline and comprising a plurality of staggered half detector segments abutted in regions about said centerline and separated from one another by empty space, said staggered half detector segments each comprising a plurality of detector modules".

None of Toth et al., Applicant's BACKGROUND OF THE INVENTION, and Hoffman et al., considered alone or in combination, describe or suggest a radiation detector including a plurality of staggered half detector segments abutted in regions around a centerline and separated from one another by empty space. Rather, Applicant's BACKGROUND OF THE INVENTION describes that a source and a detector are coupled to a rotating gantry, Toth et al. describe detector modules, and Hoffman et al. describe blades being radially spaced from and extending substantially parallel to an adjacent one of the blades, and wherein the wires extend substantially perpendicular to the blades. For the reasons set forth above, Claim 3 is submitted to be patentable over Toth et al. in view of Applicant's admission of the prior art, and further in view of Hoffman et al.

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Claim 10 depends indirectly from independent Claim 3. When the recitations of Claim 10 are considered in combination with the recitations of Claim 3, Applicant submits that dependent Claim 10 likewise is patentable over Toth et al. in view of Applicant's admission of the prior art, and further in view of Hoffman et al.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claim 10 be withdrawn.

The rejection of Claims 12-16, 18, and 20 under 35 U.S.C. § 103 as being unpatentable over Toth et al. in view of Applicant's admission of the prior art, Cuppen, Fujise, and Gordon is nespectfully traversed.

Gordon describes a spatially encoded detector arrangement, with columns of different lengths, the different slice thickness can be achieved in an efficient manner to allow for variable slice thicknesses and multiple slices for CT scanning (Column 11, lines 44-49).

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Applicant's BACKGROUND OF THE INVENTION, Toth et al., Cuppen, Fujise, and Gordon, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Toth et al. with Applicant's BACKGROUND OF THE INVENTION, Cuppen, Fujise, and Gordon because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

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Furthermore, it is impermissible to use the claimed invention as an instruction manual or "remplate" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Toth et al. is cited for its teaching of modules, Applicant's BACKGROUND OF THE INVENTION is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, Cuppen is cited for its teaching of columns of different widths, Fujise is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, and Gordon is cited for its teaching of a spatially encoded detector arrangement. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none of Toth et al., Applicant's BACKGROUND OF THE INVENTION, Cuppen, Fujise, and Gordon, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 12 recites a CT system including "a rotating gantry having an axis of rotation (z-axis); a radiation source configured to rotate with the rotating gantry and a multislice detector array configured to rotate with the rotating gantry and configured to acquire attenuation data from a patient between the radiation source and the detector, said detector array comprising a plurality of staggered half-

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detector segments separated from one another by empty space and configured to provide artenuation data having a relatively higher spatial resolution near a centerline of said detector array and a relatively lower spatial resolution distal to said centerline, a data acquisition system configured to receive attenuation data from the detector, including the relatively lower spatial attenuation data and the relatively higher spatial resolution attenuation data, and an image reconstructor configured to utilize the attenuation data to reconstruct an image of the organ, including utilizing the relatively lower spatial resolution data, to thereby reduce artifacts in the image".

None of Toth et al., Applicant's BACKGROUND OF THE INVENTION, Cuppen, Fujise, and Gordon, considered alone or in combination, describe or suggest a plurality of staggered half-detector segments separated from one another by empty space and configured to provide attenuation data having a relatively higher spatial resolution near a centerline of the detector array and a relatively lower spatial resolution distal to the centerline. Rather, Applicant's BACKGROUND OF THE INVENTION describes that a source and a detector are coupled to a rotating gantry, Toth et al. describe detector modules, Cuppen describes columns of different widths, Fujise describes a source and a detector coupled to a rotating gantry and reconstructing of images, and Gordon describes a spatially encoded detector arrangement. For the reasons set forth above, Claim 12 is submitted to be patentable over Toth et al. in view of Applicant's admission of the prior art Cuppen, Fujise, and Gordon.

Claims 13-16, 18, and 20 depend from independent Claim 12. When the recitations of Claims 13-16, 18, and 20 are considered in combination with the recitations of Claim 12, Applicant submits that dependent Claims 13-16, 18, and 20 likewise is patentable over Toth et al. in view of Applicant's admission of the prior art, Cuppen, Fujise, and Gordon.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 12-16, 18, and 20 be withdrawn.

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The rejection of Claim 17 under 35 U.S.C. § 103 as being unpatentable over Toth et al. in view of Applicant's admission of the prior art, Cuppen, Fujise, and Gordon, and further in view of Hsieh is respectfully traversed.

Applicant respectfully submits that the Section 103 rejection of the presently pending ciaims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Applicant's BACKGROUND OF THE INVENTION, Toth et al., Cuppen, Fujise, Gordon, and Hsieh considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Toth et al. with Applicant's BACKGROUND OF THE INVENTION, Cuppen, Fujise, Gordon, and Hsieh because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Toth et al. is cited for its teaching of modules, Applicant's BACKGROUND OF THE INVENTION is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, Cuppen is cited for its teaching of columns of different widths, Fujise is cited for its teaching of a source and a detector coupled to

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a rotating gantry and reconstructing of images, Gordon is cited for its teaching of a spatially encoded detector arrangement, and Hsieh is cited for its teaching of double and triple ganging of cells. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

Further, and to the extent understood, none of Toth et al., Applicant's BACKGROUND OF THE INVENTION, Cuppen, Fujise, Gordon, and Hsieh, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 17 depends from Claim 12 which recites a CT system including "a rotating gantry having an axis of rotation (zaxis); a radiation source configured to rotate with the rotating gantry; and a multislice detector array configured to rotate with the rotating gantry and configured to acquire attenuation data from a patient between the radiation source and the detector, said detector array comprising a plurality of staggered half-detector segments separated from one another by empty space and configured to provide attenuation data having a relatively higher spatial resolution near a centerline of said detector array and a relatively lower spatial resolution distal to said centerline, a data acquisition system configured to receive attenuation data from the detector, including the relatively lower spatial attenuation data and the relatively higher spatial resolution attenuation data, and an image reconstructor configured to utilize the attenuation data to reconstruct an image of the organ, including utilizing the relatively lower spatial resolution data, to thereby reduce artifacts in the image".

None of Toth et al., Applicant's BACKGROUND OF THE INVENTION, Cuppen, Fujise, Gordon, and Hsieh, considered alone or in combination, describe or suggest a plurality of staggered half-detector segments separated from one another by empty space and configured to

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provide attenuation data having a relatively higher spatial resolution near a centerline of the detector array and a relatively lower spatial resolution distal to the centerline. Rather, Applicant's BACKGROUND OF THE INVENTION describes that a source and a detector are coupled to a rotating gantry, Toth et al. describe detector modules, Cuppen describes columns of different widths, Fujise describes a source and a detector coupled to a rotating gantry and reconstructing of images, Gordon describes a spatially encoded detector arrangement, and Hsieh describes double and triple ganging of cells. For the reasons set forth above, Claim 12 is submitted to be patentable over Toth et al. in view of Applicant's admission of the prior art Cuppen, Fujise, Gordon, and Hsieh.

Claim 17 depends from independent Claim 12. When the recitations of Claim 17 are considered in combination with the recitations of Claim 12, Applicant submits that dependent Claim 17 likewise is patentable over Toth et al. in view of Applicant's admission of the prior art, Cuppen, Fujise, Gordon, and Hsieh.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claim 17 be withdrawn.

The rejection of Claim 19 under 35 U.S.C. § 103 as being unpatentable over Toth et al. in view of Applicant's admission of the prior art, Cuppen, Fujise, and Gordon, and further in view of Hoffman et al. is respectfully traversed.

Applicant respectfully submits that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Applicant's BACKGROUND OF THE INVENTION, Toth et al., Cuppen, Fujise, Gordon, and Hoffman et al. considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to

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one skilled in the art to combine Toth et al. with Applicant's BACKGROUND OF THE INVENTION, Cuppen, Fujise, Gordon, and Hoffman et al. because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicant's own teaching.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Toth et al. is cited for its teaching of modules, Applicant's BACKGROUND OF THE INVENTION is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, Cuppen is cited for its teaching of columns of different widths, Fujise is cited for its teaching of a source and a detector coupled to a rotating gantry and reconstructing of images, Gordon is cited for its teaching of a spatially encoded detector arrangement, and Hoffman et al. is cited for its teaching of blades being radially spaced from and extending substantially parallel to an adjacent one of the blades, and wherein the wires extend substantially perpendicular to the blades. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection be withdrawn.

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Further, and to the extent understood, none of Toth et al., Applicant's BACKGROUND CF THE INVENTION, Cuppen, Fujise, Gordon, and Hoffman et al., considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending caims are patentably distinguishable from the cited combination. Specifically, Claim 19 depends from Claim 12 which recites a CT system including "a rotating gantry having an axis of rotation (z-axis); a radiation source configured to rotate with the rotating gantry; and a multislice detector array configured to rotate with the rotating gantry and configured to acquire attenuation data from a patient between the radiation source and the detector, said detector array comprising a plurality of staggered half-detector segments separated from one another by empty space and configured to provide attenuation data having a relatively higher spatial resolution near a centerline of said detector array and a relatively lower spatial resolution distal to said centerline, a data acquisition system configured to receive attenuation data from the detector, including the relatively lower spatial attenuation data and the relatively higher spatial resolution attenuation data, and an image reconstructor configured to utilize the attenuation data to reconstruct an image of the organ, including utilizing the relatively lower spatial resolution data, to thereby reduce artifacts in the image".

None of Toth et al., Applicant's BACKGROUND OF THE INVENTION, Cuppen, Fujise, Gordon, and Hoffman et al., considered alone or in combination, describe or suggest a plurality of staggered half-detector segments separated from one another by empty space and configured to provide attenuation data having a relatively higher spatial resolution near a centerline of the detector array and a relatively lower spatial resolution distal to the centerline. Rather, Applicant's BACKGROUND OF THE INVENTION describes that a source and a detector are coupled to a rotating gantry, Toth et al. describe detector modules, Cuppen describes columns of different widths, Fujise describes a source and a detector coupled to a rotating gantry and reconstructing of images, Gordon describes a spatially encoded detector arrangement, and Hoffman et al. describe blades being radially spaced from and extending substantially parallel to

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an adjacent one of the blades, and wherein the wires extend substantially perpendicular to the blades. For the reasons set forth above, Claim 12 is submitted to be patentable over Toth et al. in view of Applicant's admission of the prior art Cuppen, Fujise, Gordon, and Hoffman et al.

Claim 19 depends from independent Claim 12. When the recitations of Claim 19 are considered in combination with the recitations of Claim 12, Applicant submits that dependent Claim 19 likewise is patentable over Toth et al. in view of Applicant's admission of the prior art, Cuppen, Fujise, Gordon, and Hoffman et al.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claim 19 be withdrawn.

In view of the foregoing remarks, this application is believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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15-CT-5419 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: David M. Hoffman

Art Unit: 2882

Serial No.: 09/750,387

Examiner: Chih-Cheng Glen Kao

Filed: December 28, 2000

For: METHODS AND APPARATUS

FOR COMPUTED

TOMOGRAPHIC CARDIAC OR

ORGAN IMAGING

SUBMISSION OF MARKED UP CLAIMS

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Submitted hereby are marked up Claims with additions underlined and deletions [bracketed].

IN THE CLAIMS

1. (once amended) A method for imaging an organ of a patient comprising the steps of:

scanning a volume of a patient's body including an organ of the patient with a computed tomographic (CT) imaging system having a radiation source and detector coupled to a rotating gantry, the detector array having a z-direction parallel to an axis of rotation of the gantry and an x-direction transverse to the z-direction;

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acquiring attenuation data from a plurality of staggered half detector segments of the detector array, wherein said staggered half detector segments separated by empty space therebetween; and

reconstructing an image including the patient's organ using the acquired attenuation data.

- 3. (once amended) A radiation detector for an imaging system, said radiation detector having a centerline and comprising a plurality of staggered half detector segments abutted in regions about said centerline and separated from one another by empty space, said staggered half detector segments each comprising a plurality of detector modules.
- 12. (once amended) A computed tomographic (CT) imaging system for imaging an ergan of a patient, said CT system comprising:
 - a rotating gantry having an axis of rotation (z-axis);
 - a radiation source configured to rotate with the rotating gantry, and
- a multislice detector array configured to rotate with the rotating gantry and configured to acquire attenuation data from a patient between the radiation source and the detector, said detector array comprising a plurality of staggered half-detector segments separated from one another by empty space and configured to provide attenuation data having a relatively higher spatial resolution near a centerline of said detector array and a relatively lower spatial resolution distal to said centerline,
- a data acquisition system configured to receive attenuation data from the detector, including the relatively lower spatial attenuation data and the relatively higher spatial resolution attenuation data, and

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an image reconstructor configured to utilize the attenuation data to reconstruct an image of the organ, including utilizing the relatively lower spatial resolution data, to thereby reduce artifacts in the image.

Respectfully Submitted,

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From: Thomas M. Fisher

Serial Number: 09/750,387

Docket: 15-CY-5419

PAPERS TRANSMITTED: Amendment Transmittal (3 pgs.)

Amendment in response to Office Action dated

December 19, 2002 (25 pgs.)

Submission of Marked Up Claims (3 pgs.)

Total pages including cover page: 32 If all pages are not received, please contact Thomas Fisher at (314) 621-5070, ext. 7462

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Date: May 19, 2003

Thomas M. Fisher Registration No. 47,564

Applicant: David M. Hoffman

Serial No.: 09/750,387 Filed: December 28, 2000

Art Unit: 2882

Examiner: Chih-Cheng Glen Kao

Atty. Dkt. No.: 15-CT-5419 (12553-210)

For: METHODS AND APPARATUS FOR COMPUTED TOMOGRAPHIC CARDIAC OR ORGAN

EMAGING

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